

1/2 042 UNCLASSIFIED PROCESSING DATE--ZUNUV70
TITLE--CONVERSION OF POTASSIUM CARBONATE INTO POTASSIUM BICARBONATE IN A
LOW TEMPERATURE ZONE OF THE GAS CHANNEL OF A MAGNETOHYDRODYNAMIC, MHD,
AUTHOR--(05)-GOLUBKOVA, A.S., ZAKHAROVA, N.I., LARICHEVA, M.A., MOSTINSKIY,
L.L., NEKHOROSHEV, R.S.
COUNTRY OF INFO--USSR
SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(2), 459-60
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, ENERGY CONVERSION (NON-PROPULSIVE) PROPULSION
AND FUELS
TOPIC TAGS--COMBUSTION PRODUCT, IONIZATION, POTASSIUM CARBONATE,
MAGNETOHYDRODYNAMIC CONVERSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3004/1913

STEP NO--UR/0294/70/008/002/0459/0460

CIRC ACCESSION NO--AP0132175

UNCLASSIFIED

Z/2 042

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132175

ABSTRACT/EXTRACT--(U) CP-O- ABSTRACT. THE CONVERSION OF THE IONIZING
ADDN. K SUB2 CO SUB3 TO KHCO SUB3 IN THE LOW TEMP. ZONE OF MHD
GENERATORS WAS STUDIED AT COMBUSTION PRODUCT TEMPS. 70-250DEGREES, ABS.
PRESSURES 5.5-7.5 N-M PRIME2, AND CO SUB2 CONTENTS IN THE COMBUSTION
PRODUCTS OF 8-9.5PERCENT. SHIELDED PROBE AND ISOSTATIC SAMPLING ON
GLASS WGL OF DUST LADEN VAPORS FOLLOWED BY CHEM. ANALS. CONFIRMED THAT
KHCO SUB3 FORMED AT TEMPS IS SMALLER THAN 160DEGREES AND THE FRACTION
KHCO SUB3 WAS 40 AND 80 WT. PERCENT AT 120 AND 70-90DEGREES, RESP.
FACILITY: INST. VYS. TEMP., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 612.821.6+615.78

ZAKHAROVA, N. N., Laboratory of the Pathophysiology of Higher Nervous Activity,
Central Scientific Research Institute of Forensic Psychiatry imeni
V. P. Serbskiy, Moscow

"The Role of Cholinergic Mechanisms in Negative Human Emotions"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, Vol 23, No 3, May/Jun 73,
pp 532-537

Abstract: Thirty emotionally unstable persons were tested to determine the role of cholinergic mechanisms in negative emotions aroused, in this case, by sound signals. A number of physiological reactions to the signals were registered before and after administration of average therapeutic doses of amizyl, an anticholinergic, and galanthamine, an anticholinesterase agent. The results indicate that the effect of amizyl lowered the level of emotional stress arising in response to words related to the subjects' emotional conflicts, but did not significantly affect perception of the auditory signals. Galanthamine, on the other hand, did not significantly affect the emotional responses, but did improve perception of the signals. Emotional activity was found to be particularly affected by a decrease in the activity of cholinergic mechanisms, while an increase affected the perception of sensory signals. These effects were
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ZAKHAROVA, N. N., Zhurnal Vysshey Nervnoy Deyatel'nosti, Vol 23, No 3, May/
Jun 73, pp 532-537

not found to be significant, however, in the case of words with neutral
connotations.

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USSR

UDC 612.821.8

ZAKHAROVA, N. N., Central Scientific Research Institute of Forensic Psychiatry imeni V. P. Serbskiy

"The Effect of Emotional Stress on the Perception of Weak Acoustic Signals"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, No 1, 1970, pp 207-209

Abstract: In 30 patients showing psychopathic type symptoms some time receiving head injuries, the threshold of detection of sounds was considerably higher than in healthy individuals. In healthy people, the difference in thresholds of detection of short and long sounds was 20 db, as compared with 31 db in individuals suffering from post-traumatic psychopathic-like syndrome. The thresholds fluctuated considerably from one day to another, indicating that the shifts were functional in nature. After the presentation of emotionally laden words, the normal thresholds of sound detection generally rose (34% of the cases) or fell (47%), depending mostly on the content of the particular words used.

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1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--INHIBITION OF DIMETHYLFORMAMIDE HYDROLYSIS -U-

AUTHOR--(04)--LYAKUMOVICH, A.G., PANTUKH, B.I., BAIBURINA, Z.S., ZAKHAROVA,

N.V.
COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(3), 182-3

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FORMIC ACID, AMIDE, HYDROLYSIS, AUTOCATALYSIS, FURFURAL, AMINE
DERIVATIVE, HEXAMETHYLENETETRAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0825

STEP NO--UR/0064/70/046/003/0182/0183

CIRC ACCESSION NO--AP0124492

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124492

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HYDROLYSIS OF HCONME SUB2 IN THE PRESENCE OF 10PERCENT OF H SUB2 O AT 120DEGREES IS AUTOCATALYTIC AND THE CONCN. OF HYDROLYSIS PRODUCTS RAPIDLY INCREASES WITH TIME, TO SIMILAR TO 0.5 MOLE-L. AFTER 3 HR. THE ADDN. OF UROTROPINE (0.2PERCENT) TOGETHER WITH SOME METALLIC FE INHIBITS THE HYDROLYSIS OF HCONME SUB2 E.G., NO HCO SUB2 H IS FORMED IN THE SYSTEM AFTER UP TO 30 DAYS AT 125DEGREES; FURFURAL (AND TO A LESSER EXTENT BZH) ALSO INHIBIT THE HYDROLYSIS OF I, WHILE PHNO SUB2 AND OTHER NITRO COMPS. ARE EFFECTIVE INHIBITORS.

UNCLASSIFIED

ZAKHAROVA, T. P.

gas turbine

STRENGTH OF CAST GAS TURBINE BLADES UNDER VARIABLE LOADS

Article by T. P. Zakharyova and N. E. Baranov, TsIAM (Central Scientific Research Institute of Aircraft Engines) Invent 2, Kiev, Problemy Tekhnologii, Russian, No 7, July 1971, submitted 3 August 1971, pp 55-61

UDC 539.43.669.24.5:621.45

JPRS 55555 D-2
28 March 1972

The possibility of further development of high-temperature gas turbine engines depends to a great extent on the strength of the cast turbine rotor blades. Heat-resistant casting alloys ZH56K, ZH50U and VSh12U, used for the manufacture of these blades, have the highest long-term strength characteristics at high temperatures of all heat-resistant alloys.

However, the fatigue resistance of smooth cylindrical specimens cast of these materials is 1.3 to 1.5 times lower than the fatigue resistance of deformed type ZH56K alloy (endurance limit based on $2 \cdot 10^7$ cycles).

The relatively low endurance limits of cast nickel-based alloys result from the high degree of structural macro- and microheterogeneity and the limited capacity of these alloys for local plastic deformation. Variable loads applied to a cast alloy with high structural heterogeneity cause areas of concentrated plastic deformation and stress. When an asymmetrical cycle of variable stresses is applied, the ability to equalize the field of stresses in areas of stress concentration depends on plastic deformation and the creep of the material in the dangerous cross section of the part.

Fatigue of shaped blade area. Fatigue rupture of the shaped area of a turbine blade under the influence of vibration loading is facilitated by:

- 1) The presence of casting defects such as seams, cavities, plugs in the area of application of the variable stresses,
 - 2) Low surface smoothness (casting skin) of blades not worked following casting;
 - 3) Strain hardening from mechanical working, causing cracking along grain boundaries during operation;
 - 4) Overheating and repeated thermal stresses, leading to cracking of edges;
- (Footnote omitted)

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5) Unfavorable casting structure, combination of large grain in orientation transverse to axis of blade with very fine grain.

Defects in profile geometry, such as those caused by displacement of the rod relative to the shell during casting of cooled deflector-type blades, are unfavorable from the standpoint of strength. If this type of blade is repaired by fatigue, the crack begins at the thin edge.

The great dispersion of results of fatigue testing of cast turbine blades is caused by the variety of technological casting methods used for turbine blades, the difference is in alloy crystallization conditions in different casting zones of a single structure and the great unevenness of temperature fields in blade cross sections.

Figure 1 shows the results of fatigue testing of cast blades, including cooled blades, made of ZHS6K alloy, according to data produced for blades of different motors.

The greatest and least values of endurance limits of blades differ by a factor of two ($\sigma_{-1}^{\max} = 51 \text{ kg/mm}^2$; $\sigma_{-1}^{\min} = 15 \text{ kg/mm}^2$, based on mean values within the limits of dispersion for one blade production group. In contrast to stamped blades, where the fatigue strength of the initial material is always greater than the fatigue strength of the finished blades, the endurance limit of cast specimens fall somewhere near the middle of the field of dispersion of strength values for blades.

Figure 2 shows a diagram of the relationships of endurance limits to ultimate strengths for cylindrical specimens and turbine blades fatigue tested by symmetrical bending. For deformed alloys ZHS6KP, E1667, and E14378, the level of the σ_{-1}/σ_b ratio for the specimens is 0.37-0.41; for cast alloys ZHS6K and ZHS6U, $\sigma_{-1}/\sigma_b = 0.25-0.3$ in a broad range of test temperatures from 20 to 900°C. As we can see from the figure, for cast blades the ratio of fatigue strengths of blades and specimens, characterized by the coefficient $\phi = (\sigma_{-1})_b / (\sigma_{-1})_s$, has a higher dispersion ($\phi = 0.64-1.25$) than for deformed blades (0.5-0.7). Therefore, approximate determination of the fatigue characteristics of blades for calculation, of strength reserve on the basis of data produced using blades of other enterprises or individually cast specimens, which can sometimes be done for forged alloys, is not justified in the case of cast structures.

¹ Based on materials of reports read at conference on structural strength of motors in Kuybyshev, 1970.

1/3 050 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EXCITATION OF STIMULATED RAMAN SPECTRA IN LIQUIDS DURING THE
MODULATION OF LASER QUALITY BY THE SUBSTANCE BEING STUDIED -U-
AUTHOR-(04)-KOROLEV, F.A., BASKAKOVA, Z.A., ZAKHAROVA, I.S., ODINTSOV,
V.I.
COUNTRY OF INFO--USSR
SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(6), 295-7
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RAMAN SPECTRUM, LIGHT SCATTERING, LASER MODULATION, RUBY
LASER, BENZENE, CARBON TETRACHLORIDE, CYCLOHEXANE, LASER PULSE

CENTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1170

STEP NO--UR/0386/70/011/006/0295/0297

CIRC ACCESSION NO--AP0124825

UNCLASSIFIED

2/3 050

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124825

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. ON THE BASIS OF REVERSE STIMULATED MANDELSTAM BRILLOUIN (MB) LIGHT SCATTERING, WHICH LEADS TO REFLECTION OF A CONSIDERABLE PART OF THE INCIDENT LIGHT OUTSIDE OF THE LASER, MODULATION OF LASER QUALITY WAS ACHIEVED. WITH AN EXPTL. EQUIPMENT COMPOSED OF A MIRROR, RUBY CRYSTAL (120 MM), FOCUSING LENSE, CELL 940 CM), AND SPECTROGRAPH, THE EFFECT OF BENZENE (I), CYCLOHEXANE (II), AND CCL SUB4 (III) WAS STUDIED. ENERGY OF A SINGLE PULSE INCIDENT ON THE SUBSTANCE WAS SIMILAR TO 1.5 J. FOR I AND II, SIMILAR TO 1.2 FOR III. HALF WIDTH OF THE PULSE DURATION WAS SIMILAR TO 25 NSEC FOR I AND II, SIMILAR TO 20 FOR III. SPECTRAL STUDIES SHOWED THE PRESENCE OF 4-5 COMPONENTS OF MB LIGHT SCATTERING, LINEWIDTH OF SINGLE COMPONENT WAS SIMILAR TO 10 CM PRIME NEGATIVE2 CM PRIME NEGATIVE1 (WHICH IS CONSIDERABLY LOWER IN COMPARISON WITH THE LINEWIDTH IN THE REGIME OF FREE GENERATION, 0.35 CM PRIME NEGATIVE1). IN I 4 STOKES EMISSION COMPONENTS WITH A SHIFT OF 992 CM PRIME NEGATIVE1 WERE EXCITED (THE POWER OF THE 2ND WAS HIGHER THAN 15 MW.). IN II 2 STOKES COMPONENTS WERE EXCITED CORRESPONDING TO THE MOL. VIBRATION 2852 CM PRIME NEGATIVE1 (THE MOST INTENSE COMPONENT IS SIMILAR TO 20 MW.), 2 COMPONENTS OF THE VIBRATION 801 CM PRIME NEGATIVE1, AND 2 COMBINATION STOKES FREQUENCIES WITH SHIFT (2852 PLUS 801) AND (2 TIMES 2852 PLUS 802) CM PRIME NEGATIVE1. IN III 4 STOKES COMPONENTS WITH SHIFT 459 CM PRIME NEGATIVE1 WERE EXCITED (THE 2ND WITH SIMILAR TO 10 MW.). HIGHER POWER OF THE EXCITING PULSE AND MORE EFFECTIVE EXCITATION OF THE RAMAN SPECTRA WERE FOUND THAN WITH EQUIPMENT USING A SATURABLE ABSORBER FOR THE MODULATION OF LASER QUALITY.

UNCLASSIFIED

3/3 050
CIRC ACCESSION NO--AP0124825
ABSTRACT/EXTRACT--FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW,
USSR.

UNCLASSIFIED

PROCESSING DATE--30OCT70

UNCLASSIFIED

USSR

UDC 581.035

SID'KO, F. Ya.; TERSKOV, I. A., Corresponding Member Academy of Sciences
USSR; BERESNEV, G. F., YEROSHIN, N. S., and ZAKHAROVA, V. A., Institute of
Physics imeni L. V. Kirenskiy, Siberian Department of the Academy of Sciences
USSR, Krasnoyarsk

"The Possibility of Utilizing Transition Processes in Order to Increase the
Efficiency of Photosynthesis by the One-Celled Alga Chlorella"

Moscow, Doklady Akademii Nauk SSSR, Vol 199, No 5, 1971, pp 1,206-1,208

Abstract: In the experiments conducted, it was established that effective
utilization of radiant energy is not achieved in the cultivation of chlorella
in dense cultures; the efficiency of photosynthesis is lower than that obtained
when the cells are illuminated uniformly. The efficiency could be increased
by utilizing light adaptation during a transitional period. This can be done
when cultivation is carried out in a multilayer apparatus. A significant
effect was already obtained in a two-layer apparatus irradiated from one side.
On cultivation in the first layer at a high irradiance, in which the photo-
synthetic activity of the cells reached a high level, the output was pumped
into the second layer with a lower irradiance. The final crop was collected
from the second layer. The optical density in the first layer was $D \leq 0.5$ -
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SID'KO, F. Ya., et al., Doklady Akademii Nauk SSSR, Vol 199, No 5, 1971, pp 1,206-1,208

0.6, while the total value of D in the two layers corresponded to an equation derived by Sid'ko et al in Sbornik, Aktinometriya i Atmosfernaya Optika [Collection. Actinometry and Optics of the Atmosphere], p 326, Tallin, 1968. The utilization of radiant energy increased in the two-layer apparatus. Thus, at irradiances corresponding to 240 and 480 wt/m^2 photosynthetically active radiation the efficiency of photosynthesis increased by 25 and 40% vs. that in single-layer cultivation. At an irradiance of 408 wt/m^2 , the efficiency of photosynthesis approached 19% and was approximately 1.5 times higher than in single-layer cultivation at irradiances of 80-100 wt/m^2 that were optimal for the single-layer process. The reverse procedure of first irradiating chlorella cells at a low light intensity and then carrying out cultivation at a high intensity had the opposite effect of reducing the efficiency of photosynthesis. Irradiation at high light intensities produced under certain conditions profound changes in the pigment system, morphology, and biochemical composition of chlorella cells, while the efficiency of photosynthesis remained high. One of the changes produced was a reduction in the concentration of chlorophyll.

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02 014 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SEARCH FOR THREE VECTOR CORRELATION IN POLARIZED NEUTRON DECAY -U-

THOR--(05)--YEROZOLIMSKIY, D.G., BONDARENKO, L.N., MOSTOVOY, YU.A.,
DOBINYAKOV, B.A., ZAKHAROVA, V.P.
COUNTRY OF INFO--USSR

SOURCE--YADERN. FIZ.; 11: 1049-57, MAY 1970

DATE PUBLISHED----MAY70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NEUTRON, RADIOACTIVE DECAY, ELECTRON, ANTIPARTICLE, WEAK
NUCLEAR INTERACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

INDEX FICHE NO----FD70/605020/009 STEP NO--UR/0367/70/011/000/1049/1057

AC ACCESSION NO--AP0141021

UNCLASSIFIED

2 514

UNCLASSIFIED

PROCESSING DATE--04DEC75

AC ACCESSION NO--AP0141021

TRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VALUE OF THE CONSTANT D OF THE TRIPLE CORRELATION BETWEEN THE VECTORS OF THE NEUTRON SPIN SIGNA AND THE DIRECTIONS OF THE ELECTRON AND ANTINEUTRINO MOMENTA P_{SUGE} AND P_{SUBPI} IS FOUND TO BE MINUS 0.01 PLUS OR MINUS 0.01. THE CORRESPONDING PHASE SHIFT BETWEEN AXIAL VECTOR AND VECTOR CONSTANTS OF THE WEAK INTERACTION IS Φ EQUALS 181.3 PLUS OR MINUS 1.3 DEGREES. FACILITY: INST. OF ATOMIC ENERGY, MOSCOW.

UNCLASSIFIED

USSR

YEROZOLIMSKIY, B. G., BONDARENKO, L. N., MOSTOVOY, Yu. A., ~~QIN~~YAKOV, B. A.;
ZAKHAROVA, V. P., and TITOV, V. A., Institute of Atomic Energy imeni I. V.
Kurchatov

"Search for Three-Vector Correlation in the Decay of Polarized Neutrons"

Moscow, Yadernaya Fizika, Vol. 11, No. 5, May 70, pp 1049-1057

Abstract: An experiment conducted to measure the constant D of triple correlation between the vectors of the neutron spin σ and the electron and antineutrino momenta p_e and $p_{\bar{\nu}}$ is described. The experiment was conducted on the IRT-M reactor of the Institute of Atomic Energy imeni I. V. Kurchatov. 23 series of measurements of duration 35-100 hours each were conducted and approximately $9.1 \cdot 10^4$ decay events were recorded. The average value of the coefficient D for all series was -0.01 ± 0.01 . The accuracy in obtaining the constant D made it possible to establish the difference from 180° of the phase difference between the axial-vector and the vector constants of weak interaction; this was found to be

$$\phi = 181.3^\circ \pm 1.3^\circ.$$

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USSR

UDC[537.226+537.311.33]:539.16.04

ZAKHAROVA, YE. K., ZUBOV, V. G., and OSIPOVA, L. P.

"Effect of Pile Irradiation on Structure and Various Properties of Crystalline and Fused Quartz"

Vozdeystviye reaktornogo oblucheniya na strukturu i razlichnyye svoystva kristallicheskogo i plavlenogo kvartsa (cf. English above), Moscow State University, Chair of Scientific Information, Chair of General Physics, Moscow, 1971, 131 pp, ill., bibliography with 236 titles, No 3465-71 Dep (from RZh-Fizika, No 2, Feb '72, Abstract No 2YE1533 DEP from authors' abstract)

Translation: A survey is made of data in the literature on the effect of pile irradiation on various physical properties of crystalline and fused quartz: density, refractive index, specific rotation, elastic constants, thermal and dielectric properties, absorption spectra, Raman spectra, X-ray photographs, etc. The analogy between a radiative and temperature α - β transition is considered, as well as the effect of annealing on radiation effects. The general pattern of radiation damage in fast neutron-irradiated quartz is discussed. Bibliography with 236 titles.

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USSR

UDC 539.61:620.17:546.26

VOLKOV, G. M., BARABANOV, V. N., DERGUNOV, N. N., ZAKHAROVA, Ye. N., and
KALUGIN, V. I., Moscow

"The Effect of the Structure of Graphite on Its Strength"

Kiev, Problemy Prochnosti, No 12, Dec 72, pp 65-67

Abstract: The mechanical strength of artificial graphites depends not only on the dispersed structure of the material, but also on its crystalline and supermolecular structure, which is the secondary structure developed as a result of different arrangement of crystallites. The effect of artificial defects of supermolecular structure on mechanical strength of pyrographite and its bonding strength is discussed by reference to diagrams and photomicrographs of its polished surface. The effect of precipitation strengthening of carbonic material as a result of decreased concentration effect of supermolecular structural defects was used for the development of a new class of carbon materials, the carbonic Pyroceram. The characteristics of the USB-15 Pyroceram are presented. Five illustrations, eight bibliographic references.

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USSR

UDC 539.61:620.17:546.26-162

VOLKOV, G. M., BARABANOV, V. N., VIRGIL'YEV, YU. S., ZAKHAROVA, YE. N., and
LEONT'YEV, YE. A.

"The Influence of Crystallite Size Upon the Strength of Coal-Graphite Materials"

Kiev, Problemy Prochnosti, No 1, Jan 72, pp 113-115

Abstract: The influence of the nuclear and electron structure of a graphite crystallite upon the mechanics of its breakdown is studied. Use is made of molecular diagrams of some compounds of the homologous series of aromatic hydrocarbons, obtained by Pulman via wave-mechanics calculations by the method of molecular orbits. The influence of the size of graphite crystals upon the strength of carbon pyroceramic material was demonstrated. The experimental data were compared with results of structural research by optical-microscope and electron-microscope methods. Three figures, 4 references.

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1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--VULCANIZATION OF RUBBERS WITH SORBIC ACID SALTS -U-
AUTHOR--(05)-ZAKHAROVA, YE.S., MIKHLIN, V.E., DONTSOV, A.A., MARKOV, V.V.,
DUGADKIN, B.A.
COUNTRY OF INFO--USSR
SOURCE--KAUCH. REZINA, 1970, 29(3), 46
DATE PUBLISHED--70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--VULCANIZATION, PEROXIDE, ORGANOCALCIUM COMPOUND, ORGANONICKEL
COMPOUND, STYRENE, SYNTHETIC RUBBER, VULCANIZATE/1U)SKS30ARK STYRENE
RUBBER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0833 STEP NO--UR/0138/70/029/003/0046/0046
CIRC ACCESSION NO--AP0124500
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124500

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. SKS 30 ARK RUBBER WAS VULCANIZED
IN THE PRESENCE OF 10 PARTS (MECH:CHCH:CHCO SUB2) SUB2 CA OR
(MECH:CHCH:CHCO SUB2) SUB2 NI AND VARIOUS PEROXIDES. THE VULCANIZATES
WITH SUPERIOR PHYSIOMECH. PROPERTIES WERE OBTAINED. FACILITY:
MOSK. INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

ZAKHAROVA, Ye. Yu.

"Note on Maximum Order of a Simple Base in P_k "

Diskretn. Analiz. [Discrete Analysis -- Collection of Works], No 18, Novosibirsk, 1971, pp 31-34, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V346 by V. Orlov).

Translation: It is proven that the maximum order of a simple basis in P_k is $k-1$.

Functional Analysis

USSR

UDC 519.95

ZAKHAROVA, Ye. Yu., and YABLONSKIY, S. V., Institute of Applied Mathematics,
Academy of Sciences USSR

"Some Properties of Nondegenerate Superpositions in P_k "

Moscow, Matematicheskkiye Zametki, Vol 12, No 1, Jul 72, pp 3-12

Abstract: Many synthesis problems require that, by means of superpositions of functions of a given finite system, a function which depends essentially on $r \geq N$ arguments (where N is arbitrarily large) be obtained by the method which is simplest in a certain sense. The article shows that the multiple-valued case in this question differs from the double-valued case in essence. It is known that from any finite system $\mathcal{K}(2)$ containing a function which depends essentially on $m \geq 2$ arguments, it is possible to obtain a function which depends essentially on an arbitrarily large number of arguments. An important property of double-valued functions is the fact that in the substitution of some function for the essential argument of another function, all essential arguments of the inner function prove to be essential arguments of the entire superposition. The complexity of generating "long" functions in the system $\mathcal{K}(2)$ is characterized by the reduced weight $\rho\mathcal{K}(2)$ of the

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USSR

ZAKHAROVA, Ye. Yu., and YABLONSKIY, S. V., Matematicheskiye Zametki, Vol 12, No 1, Jul 72, pp 3-12

system $\mathcal{R}(2)$. The complexity $L^*(N)$ of the "cheapest" function that depends essentially on N arguments satisfies the following asymptotic equality:

The article shows that this definition of reduced weight is inapplicable in P_k when $k > 2$. A new definition of reduced weight $P_{\mathcal{R}(k)}^*$ for $\mathcal{R}^{(k)} \subset P_k$, based on the analog of (1) is introduced. A lower limit which is higher than that given by R. Ye. Krichevskiy is obtained for the complexity of the realization of functions from P_k by formulas.

1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--PHOTON EMISSION BY ELECTRON REFLECTED FROM A MAGNETIC FIELD -U-
AUTHOR--(02)-LOSKUTOV, YU.M., ZAKHARTSOV, V.M.
COUNTRY OF INFO--USSR
SOURCE--VESTNIK MOSKOVSKOGO UNIV. FIZ. ASTRON. USSR, VOL. 11, NO. 1, P.
53-6 1970
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--PHOTON EMISSION, ELECTRON SCATTERING, ELECTRON POLARIZATION,
MAGNETIC FIELD EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1990/1328 STEP NO--UR/0108/70/011/001/0053/0056
CIRC ACCESSION NO--AP0109412
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0109412

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF ELECTRON REFLECTION FROM A MAGNETIC FIELD WHICH FILLS UP A SEMISPACE. THE DIFFERENTIAL SCATTERING OF DAMPED RADIATION AND ENERGY LOSS DURING A SINGLE REFLECTION ARE DETERMINED. IT IS SHOWN THAT THE PHOTON RADIATION DUE TO REFLECTION CAUSES POLARISATION OF ELECTRONS IN THE DIRECTION OPPOSITE TO THE FIELD. THE DEGREE OF THIS POLARISATION IS NEARLY UNITY FOR NONRELATIVISTIC ELECTRONS.

UNCLASSIFIED

USSR

UDC 6.12.1/8.173.1;612.1/8-014.426

MOVSESYAN, H. A., ZAKHARYAN, A. B., SARUKHANOV, A. G., BARKHODARYAN, L., and
ISHKHANYAN, A. S., Yerevan Physics Institute, Ministry of Health Armenian SSR

"Effect of a Permanent Magnetic Field on the Rat Myocardium Content of Na,
K, Ca, and Glycogen in the Process of Acclimatization to the High Mountain
Conditions of Aragats"

Yerevan, Biologicheskii Zhurnal Armenii, Vol 24, No 2, Feb 71, pp 95-97

Translation: Considerable importance has been attached during the past few years to investigation of the effects of a magnetic field on the human and animal organisms. This is explained first by the fact that the intensity of magnetic fields utilized in industry and scientific research has been considerably magnified, and second -- by the fact that a connection has been established between the increase in the frequency of sudden deaths caused by cardiovascular failure and the formation of solar magnetic storms. At present the intensity of the permanent and temporary fields in free play attains a magnitude of 100,000 oersted, while impulsive magnetic structures can create a magnetic field with an intensity of up to 2,500,000 oersted.

Data obtained in investigations of the effect of a permanent magnetic field on the electrolyte (Na, K, Ca) and glycogen and content in the myocardium

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USSR

MOVSESYAN, M. A., et al., Biologicheskii Zhurnal Armenii, Vol 24, No 2, Feb 71, pp 95-97

of rats during the process of acclimatization to high altitude conditions are cited in this report.

The investigations were carried out on 166 white nonbred rats 150-200 grams in weight transferred from Yerevan (900 meters above sea level) to Mount Aragats (3,250 meters above sea level).

At different periods of their habitation on the high mountain (24, hours, 7 and 40 days) a part of the rats were placed in a magnetic field with a magnitude of 7,800 oersted where they were kept for two hours. Together with the controls (rats not placed in the magnetic field) they were then sacrificed for the purpose of determining the myocardium content of the indexes mentioned. The electrolyte content was determined with the help of a DPF-58 type of flame photometer and expressed in milliequivalents per liter; the glycogen content was determined by the Mendel-Khuglas method.

The same indexes were studied in intact rats under Yerevan conditions. A comparison of the data obtained in the investigation of the intact rats under Yerevan conditions with the data obtained at different periods of habitation of the rats at the high altitude enabled us to arrive at a representation of the changes which take place in the myocardium content of Na, K, Ca, and

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MOVSESYAN, M. A., et al., Biologicheskii Zhurnal Armenii, Vol 24, No 2, Feb 71, pp 95-97

glycogen during the process of acclimatization. At the same time the data obtained in the study of these two groups served as a control for study of the influence of the magnetic field.

The results of the above-described investigations are presented in the table.

It is obvious from the data obtained that during the process of acclimatization changes in the rat myocardium content of Na, K, Ca, and glycogen take place.

In the course of the 40-day habitation of the rats on Mount Aragats the myocardium content of glycogen gradually diminished, with the largest diminution noted on the seventh day. In the same animals the myocardium content of Ca gradually and only slightly increased, while changes in the quantity of Na and K were wave-like in character: the heart tissue's content of Na and K increased within 24 hours, decreased by the seventh day, and again increased by the 40th day.

It was found that placing the animals in a magnetic field for two hours affects the course of the indicated changes, particularly if the rats are placed in the magnetic field on the first day of their transfer from Yerevan to Mount Aragats. For instance, it was noted that when rats 22 hours after

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MOVSESYAN, M. A., et al., Biologicheskii Zhurnal Armenii, Vol 24, No 2, Feb 71, pp 95-97

their arrival on Mount Aragats were placed and kept for a period of 2 hours in a magnetic field and then sacrificed to determine the myocardium content of Na, K, Ca, and glycogen, the results obtained differed from the results obtained in investigation of the intact animals.

Differing from the intact animals, no wave-like changes in the content of Na, K, and Ca occur in the experimental rats. Under the influence of the magnetic field the heart muscle's content of Na and K is considerably diminished. In the same animals the effect of the magnetic field tends to induce a still greater decrease of the myocardium content of glycogen. When the rats, however, were placed in the magnetic field on the 7th and 40th days on Mount Aragats no particular changes were noted.

Thus the animals were found to be most sensitive to the influence of a magnetic field when they had not become adapted to high altitude conditions. As adaptation progresses the sensitivity of the organism to the influence of the magnetic field decreases.

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Myocardium Content of Sodium, Potassium, Calcium, and Glycogen Table 1								
Place where animals were kept	Period of time at high altitudes	Manipulation	Sodium			Potassium		
			$M \pm m$	*P ₁	*P ₂	$M \pm m$	*P ₁	*P ₂
Yerevan	—	Intact	33.6±1.5	—	—	67.6±2.0	—	—
Aragats	24 Hours	Intact	43.3±1.8	0.001	—	78.4±1.5	0.05	—
		Under influence of magnetic field	27.7±0.5	0.05	0.001	54.5±3.3	0.01	0.001
	7 Days	Intact	28.0±0.3	0.01	—	61.7±2.1	0.1	—
		Under influence of magnetic field	26.6±1.9	0.01	0.5	63.3±1.6	0.5	0.5
	40 Days	Intact	39.7±1.0	0.01	—	74.3±1.5	0.05	—
		Under influence of magnetic field	36.6±0.9	0.5	0.05	73.5±1.7	0.05	0.5

(Table continued below)

(Table continued from above)

Place where animals were kept	Period of time at high altitudes	Manipulation	Calcium			Glycogen		
			$\bar{M} \pm m$	*P_1	*P_2	$\bar{M} \pm m$	*P_1	*P_2
Yerevan Aragats	24 Hours	Intact	3.3 ± 0.04	—	—	690.0 ± 19.0	—	—
		Intact	3.8 ± 0.05	0.01	—	510.0 ± 71.0	0.05	—
	7 Days	Under influence of magnetic field	3.3 ± 0.15	0.5	0.05	258.0 ± 17.7	0.02	0.01
		Intact	3.2 ± 0.10	0.5	—	220.0 ± 20.0	0.001	—
		Under influence of magnetic field	3.7 ± 0.17	0.05	—	250.0 ± 17.7	0.01	0.2
		Intact	3.9 ± 0.08	0.01	—	305.0 ± 11.6	0.01	—
	40 Days	Under influence of magnetic field	4.0 ± 0.1	0.001	0.05	260.0 ± 35.6	0.001	0.5

*R₁ -- Reliability coefficient of the difference in comparison with data ^m and data obtained in rats under Yerevan conditions

*R₂ -- Reliability coefficient of the difference in data obtained under Aragats conditions, under the influence of a magnetic field, and without it.

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Molecular Biology

USSR

UDC 547.963.3

GALOYAN, A. A., ZAKHARYAN, R. A., KARAPETYAN, L. A. and MANUKYAN, E. B.,
Institute of Biochemistry, Armenian SSR Academy of Sciences

"The Action of Dexamethazone (16-alpha-methyl-9-alpha-fluorprednisolone) on
the Nucleotide Composition of the Nucleolus-Chromosome RNA of the Brain"

Yerevan, Doklady Akademii Nauk Armyanskoy SSR, Vol 56, No 5, 1973, pp 308-
311

Abstract: The changes in the nucleotide composition of the nucleolus-
chromosome RNA of whole rat brains under the influence of the prednisolone
analogue dexamethazone were studied. The rats were decapitated four hours
after dexametazone introduction and the brain RNA was obtained by thermal
phenol fractionation. The phenol-water interface was used to obtain the
total nucleolus-chromosome RNA. It was observed that the coefficient of
specificity G+C/A+U was increased for the experimental animals, which is said
to indicate a sharp lowering in the quantity of DNA-like RNA. These results
are considered to show that dexamethazone inhibits DNA-like RNA synthesis,
acting on the genome level to delay the synthesis of informational RNA
responsible for the formation of a corticotropin-liberating hormone of a
polypeptide nature.

1/1

Oncology

USSR

UDC 577.1:615.7/9

MNDZHOYAN, A. L., GARIBDZHANYAN, B. T., ~~ZAKHARYAN, R. A.~~ and DEMIRCHYAN, D. K., Institute of Fine Organic Chemistry, Academy of Sciences Armenian SSR

"Changes in the Nucleotide Composition of RNA and DNA in Tissues of Tumor-Bearing Rats Upon Chemotherapy With Thio-TEPA"

Yerevan, Biologicheskii Zhurnal Armenii, Vol 24, No 3, Mar 71, pp 3-10

Abstract: The effects of Thio-TEPA, a frequently used antitumor drug, in changing the nucleotide composition of RNA and DNA in rapidly proliferating tissues (the spleen and testes) of normal rats and in these tissues and tumor tissues in rats with S-45 sarcoma were studied. Thio-TEPA on intraperitoneal administration ten times in the maximum tolerated dose reduced the size of the spleen and testes in both normal rats and rats with a tumor. It also reduced the size of the tumor in rats with sarcoma as compared with controls not exposed to the effect of the drug. The nucleotide composition of both RNA and DNA in the spleen and testes was altered by the drug, principally because of alkylation of guanine at N7, whereas there were no significant changes in the nucleotide composition of RNA in tumor tissue. The action of Thio-TEPA on rapidly proliferating tissue

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USSR

MNDZHOYAN, A. L., et al., Biologicheskii Zhurnal Armenii, Vol 24, No 3,
Mar 71, pp 3-10

of the two organs studied consisted of reversion of growth, while its effect
on tumor tissue was one of suppression of further growth.

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Functional Analysis

USSR

UDC: 517.5

DZHRBASHYAN, M.M. and ZAKHARYAN, V.S.

"Boundary Characteristics of Subclasses in the Bounded Form of Meromorphic Functions"

Moscow, Izvestiya AN SSSR, Seriya Matematicheskaya, Vol 34, No 6, November-December 1970, pp 1262-1339

Abstract: This paper is an investigation of class N functions of the bounded Nevanlinna form, meromorphic in the circle $|z| < 1$, with the important boundary condition that if $F(z) \in N$, the finite radial limit

$$F(e^{i\theta}) = \lim_{r \rightarrow 1-0} F(re^{i\theta}), \quad \theta \in /0, 2\pi/,$$

exists for all θ , with the possible exception of an excluded set $E \subset /0, 2\pi/$ of zero linear dimensions. In this connection, the authors discuss the work of Frostman, Blaschke, and Carleson. Regarding the problem of constructing a complete theory of the fac-

DZHRBASHYAN, M. M., et al, Izvestiya AN SSSR, Seriya matematicheskaya, Moscow, Vol. 34, No. 6, November-December 1970, pp 1262-1339

torization of the functions that are meromorphic in the circle $|z|$, the authors cite the work of the first-named author of this paper (Teoriya faktorizatsii funktsiy, meromorfnykh v krug -- Theory of the Factorization of Functions Meromorphic in a Circle --

Collection, 79(121) 1969, pp 517-615). The present article consists of the most important viewpoints on some of the basic results of the Dzhrbashyan article just cited, concerning the determination and factorization of the meromorphic functions $N\{\omega\}$ associated with the arbitrary function $\omega(x)$. Using these results, the authors investigate the boundary conditions of this class of functions for the case in which $\omega(x)$ does not drop at $(0,1)$ and the exclusion $N\{\omega\} \subset N$ occurs.

2/2

- 0 -

USSR

ARAKELYAN, S. G. and ZAKHARYAN, ZH. V., Yerevan Polytechnical Institute imeni K. Marx

"A Possibility for Testing Models of Buildings"

Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR. Seriya Tekhnicheskikh Nauk, Vol 25, No 5, 1972, pp 51-52

Abstract: In the designing of high-rise buildings of up to 20 stories in seismic regions, account must be taken of the first three forms of oscillation. It is proposed that several simultaneously acting vibration machines be used in testing models of such buildings. 1 figure. 1 reference.

1/1

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USSR

UDC 612.741.14

ZAKHAR'YANTS, YU. Z., Chair of Physiology, Institute of Physical Culture
Imeni P. F. Lesgart, Leningrad

"Muscle Electrical Activity in Man in Various Positions of the Body"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 57, No 9,
1971, pp 1,267-1,274

Abstract: Electromyographic studies have revealed that the electrical activity of skeletal muscles varies considerably, depending on the posture assumed. In a simple, natural posture, there are slow, small-voltage mono- and diphasic action potentials with periodic increases in frequency and amplitude, and there is a phasic component in the form of single potentials of constant amplitude occurring sometimes at equal and sometimes at unequal intervals. In a more complicated posture, the tonic and phasic components diminish, while asynchronous electrical discharges become predominant. In the most difficult posture, the tonic and phasic components disappear entirely, while asynchronous electrical activity alternates with synchronous potentials of large amplitudes. Thus, each posture has its own characteristic electromyographic picture. The less stable the posture, the greater are the fluctuations in the myoelectrical activity, inducing corrections in muscle tonus to maintain body equilibrium.

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USSR

UDC: 53.083.2

ZAKHAR'YASHCHEV, L. I. and AKIMOV, V. P.

"Thermally Compensated Cavity Resonator"

Leningrad, Izvestiya VUZ -- Priborostroyeniye, No. 10, 1970, pp 11-15

Abstract: This article proposes a type of thermally compensated cavity resonator which avoids the defect of most such instruments. That defect is that the conventional device does not permit interconnected thermal compensation processes to be realized along the length and diameter of the cavity. Mathematical expressions for the thermal compensation conditions of the device are derived, and a cross-sectional drawing of the cavity resonator is shown. Since this resonator is used in a wavemeter, an expression for the relative measurement error is obtained. The authors conclude that their wavemeter offers full thermal compensation at one fixed frequency in the instrument's operating range and partial compensation over the entire range, and that its temperature measurement error is at least one order less than that of similar uncompensated devices.

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USSR

Z UDC: 621.317.763

ZAKHAR'YASHCHEV, L. I., AKIMOV, V. P.

"Wide-Band Thermal Compensation of SHF Resonance Wave Meters"

Tr. Ryazansk. Radiotekhn. in-ta (Works of the Ryazan Radio Engineering Institute),
1970, Vyp. 23, pp 254-262 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7A210)

Translation: A wave meter design is proposed which provides for complete compensation of the change in the geometric characteristics of the resonator under the effect of temperature, and also with a certain error permits compensation for the change in the dielectric constant of the air which fills the resonator. It is pointed out that measurement precision is improved appreciably without substantial material expenditures by using the SHF resonance wave meter. E. L.

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USSR

UDC 66.061.52

KAGAN, S. Z., KOVALEV, YU. N., and ZAKHARYCHEV, A. P., Moscow Chemical Technological Institute Imeni D. I. Mendeleev

"The Phase Contact Area in Drop Formation"

Moscow, Teoreticheskiye Osnovy Khimicheskoy Tekhnologii, Vol 6, No 6, Nov-Dec 72, pp 924-927

Abstract: The goal of this investigation was to determine experimentally the relationship between the surface of drops being formed at different time periods and the volume and radius of the cones. Also the flow velocity was determined at which the drop formation could be considered as a quasistationary process controlled by the equilibrium between the forces of interphase stress and of the weight forces. The volume of a drop can be described by the equation $v = v_0 + W_t$, where $0 \leq t \leq \tau$; it depends on the consumption of the liquid W and the volume of liquid remaining at the cones during the break-away of the previous drop. The flow process can be considered as quasistationary up to Weber values of 0.2-0.4. With higher Weber numbers the liquid volume remaining on the cone begins to be directly related to the flow rate. In that case determination of the volume on surface of the drops being formed can be carried out only from the equations of the movement.

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CSO: 1841 -W

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1/2 008 UNCLASSIFIED ~~SECRET~~ PROCESSING DATE--18SEP70
TITLE--INTENSIFIED PREPARATION OF WHITE ENAMELS IN BEAD MILLS -U-
AUTHOR--(051)-ZAKHARYCHEV, V.P., IOFFE, G.S., NEVZOROV, E.N., MIRONOV, B.V.,
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ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. A RHEOL. METHOD WAS DEVELOPED FOR THE DETN. OF THE OPTIMUM TIO SUB2-ALKYD UREA MCH025 VARNISH RATIO DURING THE PRODUCTION OF MCH181 ENAMEL (I) IN BEAD MILLS. THE OUTPUT OF THE BEAD MILLS INCREASED BY A FACTOR OF 2.23 WHEN THE OLDER FORMULATION WAS REPLACED BY THE I FORMULATION DEVELOPED FROM RHEOL. DATA.

UNCLASSIFIED

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USSR

UDC 621.396.67

BAJURIN, V. I., ZAKHAR'YEV, L. N., and LEMANSKIY, A. A.

"Effect of Nonidentical Antennas of a Doppler Velocity Meter on Its Performance Accuracy"

Moscow, Radiotekhnika, Vol 27, No 12, 1972, pp 94-96

Abstract: Formulas found in a previous work on determining the direction corresponding to the spectrum gravity center of a signal received by a Doppler velocity meter and effective meter antenna centers were based on the assumption that the receiving and transmitting antennas are identical. This paper examines the validity of such results when the antennas are not identical. It is assumed that the problem is cylindrical, the earth's surface is uneven with uncorrelated irregularities, and the meter moves horizontally. The Doppler spectral envelope D at the receiving antenna output is derived for antennas having exponential amplitude distributions from the aperture field distributions. The centroid of D is derived, and the effective meter antenna centers are then found. These centers have different amplitude-phase distributions, and they are displaced relative to their geometric centers. The results are plotted for the displacement as a function of a weighted damping factor corresponding to aperture point distribution amplitudes which exponentially decay from 1 at the rear of the aperture to a power level P at the front for each antenna $1/2$.

USSR

RAEURIN, V. I., et al., Radiotekhnika, Vol 27, No 12, 1972, pp 94-96

for 0.01, 0.02, 0.04, 0.06, and 0.08 power levels. Finally, an equation is presented for the direction of the Doppler spectrum centroid of an incoming signal in terms of the directions of the principal maximums in the receiving and transmitting antenna patterns.

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USSR

UDC 538.577.31

VINICHENKO, YU.P., ZAKHAR'YEV, L.N., LEMANSKIY, A.A., TUMANSKAYA, A. YE.

"Diffraction Of A Plane Wave At The Grating Of Plane Waveguides With Protruding Dielectric Plates"

Radiotekhnika i elektronika, Vol XVII, No 7, July 1972, pp 1382-1386

Abstract: In order to evaluate the efficiency of using dielectric radiators for matching waveguide-type gratings with space, the problem is considered of diffraction of a plane wave at an endless grating of plane waveguides filled with dielectric plates which protrude some distance from the waveguide. It is assumed that the waveguides have perfect conductivity and their thickness is arbitrary. This problem reduces to the solution of an infinite system of algebraic equations concerned with the amplitudes of the partial waves in space under the grating in the region which is occupied by the protruding parts of the plates and within the waveguides. The results are presented of numerical calculations which show that the dielectric radiators make it possible substantially to decrease the mismatch of a waveguide-type grating with space. 4 fig. 2 ref. Received by editors, 14 June 1971.

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USSR

UDC 621.396.677.861.5.001.24

ZAKHAR'YEV, L. N., LEMANSKIY, A. A., and TUMANSKAYA, A. Ye.

"Computing the Radiating System of a Two-Mirror Antenna"

Moscow, Antenny, No. 10, 1971, pp 48-60

Abstract: This article is concerned with the correctness of the method of geometric optics in computing and designing two-mirror antennas. It differs from other articles on this same subject in that it computes the field created by the counterreflector, which is an arbitrarily asymmetrical body, at the surface of the main antenna, a paraboloid of rotation. This computation is made on the condition that the counterreflector is in the Fresnel zone of the radiator while the mirror is in the Fresnel zone of the counterreflector. For ease of computation, it is assumed that the primary radiator has a circular opening in which the field distribution is symmetrical with linear polarization. The solution of the problem is in the form of relationships for the field distribution in the mirror aperture. It is shown that the use of geometric optics may lead to important errors in computing the parameters of this type of antenna. Methods of compensating for diffraction field distortions in the antenna aperture are discussed. The results of experiments conducted with the antenna are also examined.

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USSR

UDC: 621.396.677:535.231.16

ZAKHAR'YEV, L. N., LEMANSKIY, A. A., TUMANSKAYA, A. Ye.

"On Calculating the Radiating System of a Two-Reflector Antenna"

V sb. Antenny (Antennas--collection of works), vyp. 10, Moscow, "Svyaz", 1971, pp 48-60 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5B60)

Translation: Calculations carried out in the Kirchhoff approximation are used as a basis for evaluating the part played by diffraction effects and the influence of the short-range zone in the radiating system of a two-reflector antenna. A method is determined for compensating for field distortions in the reflector aperture by giving the counter-reflector the proper shape. Seven illustrations, bibliography of twelve titles. Resumé.

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USSR

UDC: 621.396.671

BABURIN, V. I., ZAKHAR'YEV, L. N., LEMANSKIY, A. A., Active Members of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"On the Center of Gravity of the Received Signal Spectrum and the Effective Centers of the Antennas in a Doppler Flight Speed Indicator"

Moscow, Radiotekhnika, Vol. 26, No 6, Jun 71, pp 49-54

Abstract: A study is made of the way in which factors leading to asymmetric beam coverage of the ground surface affect the beam direction corresponding to the center of gravity of the Doppler spectrum and the position of the effective centers of the antennas in a Doppler flight speed indicator. Calculation is simplified by considering the cylindrical problem (antenna aperture bounded in one plane and unbounded in the other), assuming a flat rough ground surface with uncorrelated irregularities. It is further assumed that the antenna system of the speed indicator is made up of two identical antennas -- receiving and transmitting -- in a row and operating in the continuous mode. Side deflection of the indicator beam is disregarded. All formulas are derived for the case of horizontal flight. It is found that for certain beam directions and ratios of antenna length to wavelength, the effective centers of the antennas practically coincide with the centers of gravity of the fourth power of amplitude distributions of the field in the antennas. Errors are evaluated. The authors thank V. I. Karandasov for constructive criticism.

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USSR

UDC 621.396.677

ZAKHAR'YEV, L. N., KONOPLEV, R. A., LEMANSKIY, A. A.

"Optimal Distribution of a Field in the Aperture of a Scanning Antenna"

Moscow, V sb. Antenny (Antennas -- collection of works), "Svyaz'", 1969, Vol 6, pp 60-66 (from RZh-Radiotekhnika, No 4, 1970, Abstract No 4B13)

Translation: The optimal excitation function is determined for an antenna with a swinging radiation pattern which ensures maximum amplitude production of the received signal on the slope of the bearing characteristic. It is proposed that the phase of the field at the aperture is linear. The results of calculations are presented in the form of graphs and tables for cases of active and passive direction finding. Original article: two illustrations and seven bibliographic entries. B.V.

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Acc. Nr:

AP0045019

Abstracting Service: 5/70
INTERNAT. AEROSPACE ABST.

Ref. Code:
UR0109

A70-22407 Problem of the diffraction of an electromagnetic wave on an array of plane waveguides (K zadache difraktsii elektromagnitnoi volny na reshetke ploskikh volnovodov).
Iu. P. Vinichenko, L. N. Zakhar'ev, A. A. Lemanskii, and A. E. Tumanskaia. *Radiotekhnika i Elektronika*, vol. 15, Jan 1970, p. 58-66. 12 refs. In Russian.

Investigation of the characteristics of the field scattered by an infinite equidistant array of plane waveguides filled by a lossless homogeneous isotropic medium. The scattered field is determined by solving an infinite system of algebraic equations using the reduction method. For the case where there is only a specularly reflected beam, an estimate is given of the degree of approximation at which the truncated system of equations yields a practically accurate solution of the problem. The characteristics of the scattered field are analyzed, and attention is given to different methods of matching the waveguide array to free space.

T.M.

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UDC: 621.371.167.3

USSR

ZAKHAR'YEV, L. N. and IEMANSKIY, A. A.

Rasseyaniye Voln "Chernymi" Telami (Wave Scattering by "Black" Bodies), Moscow, Izd-vo Sovetskoye Radio, 1972, 288 pp

Translation: Annotation: The book is a monograph on the theory of scattering of acoustic and electromagnetic waves by ideally absorbing ("black") bodies. The known methods of calculating the diffracted field by a "black" body are reviewed. A new method is formulated which makes it possible to solve the problem of scattering of a "black" body, if there is a solution for the ideally conducting body. The proposed method is applied to the solution of a number of problems in radar and antenna engineering. Various physical models of "black" bodies are discussed.

The book is intended for scientists and specialists in the field of applied electrodynamics, acoustics and antenna engineering, also for graduate and undergraduate students of the corresponding specialties.

191 illustrations, 1 table, 98 bibliographic references

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Methods of Definition and Physical Models of "Black" Body

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ZAKHAR'YEV, L. N. and LEMANSKIY, A. A., Rasseyaniye Voln "Chernymi" Telami, 1972, 288 pp

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Third Part

Use of "Black" Bodies in Antenna Technology

Chapter 7. Problems of Measuring Antenna Parameters Using a Noise Signal

Signal

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USSR

ZAKHAR'YEV, L. N. and LEMANSKIY, A. A., Rasseyaniye Voln "Chernyami" Telami, 1972, 288 pp

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USSR

ZAKHAR'YEV, L. N. and LEMANSKIY, A. A., Rasseyaniye Voln "Chernyami" Telami, 1972, 288 pp

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006
UNCLASSIFIED
TITLE--REACTION OF THE COMPONENTS OF BEAN SERIAL GRASSMIXTURES TO A
VARYING REPEATEDNESS OF MOWING -U-
AUTHOR--(C2)--ZAKHARYEV, N.I., LAZAREV, I.P.
COUNTRY OF INFO--USSR
SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 3,
PP 382-386
DATE PUBLISHED-----70
SUBJECT AREAS--AGRICULTURE
TOPIC TAGS--LEGUME CROP, PLANT PHYSIOLOGY, BIOLOGIC PIGMENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/0491
CIRC ACCESSION NO--AP0126242
STEP NO--UH/0216/70/000/003/0382/0388
UNCLASSIFIED

2/2 OC6
 CIRC ACCESSION NO--AP0126242
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF BEAN SERIAL GROSS
 MIXTURES UNDER CONDITIONS OF INTENSE CULTIVATION HAS REVEALED THE
 POSSIBILITY OF OBTAINING A LARGE YIELD OF GREEN MASS, BEING OF UTMOST
 QUALITY. PERENNIAL GRASSES UTILIZED IN CULTURED PHYTOCENOSIS ON
 IRRIGATED SOILS UNDER CONDITION OF SIMULTANEOUS SOWING OF THREE BEAN
 SPECIES (BLUE ALFALFA WHITE AND RED CLOVER) AND THREE SERIALS (AND
 REPEATED MOWING) PROVIDE A MEANS OF OBTAINING THE BEST CORRELATION IN
 THE PLANTS OF THE LEAVES AND STEMS FRACTIONS. EXPERIMENTS CARRIED OUT
 AT THE LABORATORY OF CHEMISTRY OF PLANT FORAGE (INSTITUTE OF
 BIOCHEMISTRY AND PHYSIOLOGY AC. SCI., KIRGHIZ SSR) HAVE SHOWN THE EFFECT
 OF REPEATED MOWING ON THE FOLIAGE PRODUCTION OF ALFALFA, THE PRINCIPAL
 PLANT OF THE BEAN FRACTION OF GRASS MIXTURES. THIS MAY SERVE AS AN
 IMPORTANT CRITERION OF THE INTENSITY GRADE OF REMOVAL OF THE UPPER PLANT
 MASS AS WELL AS CREATING OF OPTIMAL CONDITIONS IN ORDER TO OBTAIN A
 FORAGE PLANT BIOMASS OF EXCELLENT QUALITY AND CONTAINING THE HIGHEST
 AMOUNT OF PROTEIN, CAROTIN AND OTHER VALUABLE GROUPS OF NUTRITIVE
 SUBSTANCES. FACILITY: INSTITUTE OF BIOLOGY AND PHYSIOLOGY,
 ACADEMY OF SCIENCES, KIRGHIS SSR.

UNCLASSIFIED

PROCESSING DATE--20NOV70

UNCLASSIFIED

USSR

UDC 616.322-002.1-079.4:[616.931+616.931-008.97

FAYERMAN, N. N., GALUNINA, Z. I., BULATOVA, N. I., ~~ZAKHAR'YEVSKAYA, N. S.~~,
and KULIKOVA, V. V., Gorki Medical Institute and Gorki Institute of
Epidemiology and Microbiology

"Differential Diagnosis of Diphtherial Tonsillitis in Carriers of
Diphtheria Bacilli"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971,
pp 42-46

Abstract: In order to confirm the correctness of a diagnosis of "tonsillitis + diphtheria carrier state" and differentiate such tonsillitis from the atypical forms of diphtheria prevalent today, 521 hospitalized patients were kept under clinical observation. The dynamics of the titer of diphtheria antitoxin in the blood were studied and the titers of agglutinins and anti-O-streptolysin were studied. Low antitoxin titers in the acute period of the disease and 30- to 50-fold increase in antitoxin titers during convalescence confirmed the diagnosis of diphtheria. An increase in anti-O-streptolysin in the absence of shifts in the antitoxin titer implied a streptococcal etiology of the tonsillitis. The isolation of diphtheria

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USSR

FAYERMAN, N. N., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971, pp 42-46

bacilli at this time suggested an accompanying bacteria carrier state. Bacteriological diagnosis of diphtheria can be hastened by the use of human embryo fibroblasts. Diphtheria toxin in nasopharyngeal washings can be detected in such cultures within 24 to 48 hours.

2/2

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USSR

UDC 621.382.2.017.71

ZAKHARZHEVSKIY, YU. A., SPOKOYNYI, L. I

"To A Computation Of The Temperature Of The Structure Of Semiconductor Power Devices"

Preobrazovatel'n. tekhnika. Inform. nauchno-tekhn. sb. (Converter Technology.
Information Scientific-Technical Collection), No 3, pp 16-17 (from RZh--Elektronika
i yeye primeneniye, No 11, November 1970, Abstract No 11B143)

Translation: The paper shows that it is possible successfully to accomplish an analytical computation of the temperature of the structure of semiconductor power devices with the aid of the mathematical means of the theory of continuous linear systems and the electrothermal model of the structure of semiconductor power devices. An example is given of computation of the temperature increase of a device under the influence of a current pulse of sinusoidal form. 4 ref. V.S.

1/1

- 101 -

Fluid Dynamics

USSR

UDC: 532

SHUSHPANOV, P. I., ZAKHAVAYEVA, N. N., MIKHAYLOV, G. D., KONOVALOV, A. I.

"Effect of Ultrasound on Water in Fine Quartz Capillaries"

V sb. Primeneniye ul'traakust. k issled. veshchestva (Application of Ultra-acoustics to the Study of Matter--collection of works), vyp. 25, Moscow, 1971, pp 335-339 (from RZh-Fizika, No 6, Jun 72, Abstract No 6Ye96)

Translation: The authors investigated crystallization and melting of water in capillaries $\sim 10^{-4}$ cm in diameter. It was found in microscope studies that dark spots randomly distributed throughout the entire column of water appear in the premelting region. These spots disappear completely by the time the ice has completely melted. Ultrasonic exposure of water-filled capillaries led to the appearance of dark lines periodically spaced perpendicular to the axis of the capillary instead of the chaotically spaced points. These lines constitute a pattern of standing waves. Two series of normal modes were observed which form doublet and triple configurations when superimposed. This effect is explained within the framework of the theory of longitudinal oscillations of tubes and rods. Ultrasonic exposure was done on various frequencies in the 0.2-1.2 MHz range. The intensity of

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USSR

SHUSHPANOV, P. I. et al., Primeneniye ul'traakust. k issled. veshchestva, vyp. 25, Moscow, 1971, pp 335-339

the ultrasound was $0.5-2 \text{ W/cm}^2$. The maximum value of energy density leading to destruction of the ice lattice was $w_{\text{max}} \approx 9 \cdot 10^9 \text{ ergs/cc}$. Corresponding to this value of w_{max} is the Poisson ratio $\mu = -\chi$, which coincides with μ for steel and glass. N. P. Pokrovskiy.

2/2

USSR

UDC 632.95

ZAKHIDOV, A. Z., KHASANOV, YU. U., YAKUBOVA, R. A.

"Aldrin Content in Soil, Cotton Plants, and Their Products"

Moscow, V. sb. Vopr. gigiyeny i toksikol. pestitsidov (Problems of the Hygiene and Toxicology of Pesticides), "Meditsina", 1970, pp 262-263 (from RZh-Khimiya, No 24(II), 25 Dec 70, Abstract No 24N632, by P. V. Popov)

Translation: After aircraft spraying of cotton plantings with aldrin (I), I residues in soil varied from 0.5 to 1.1 mg/kg. After application to soil containing seeds, the amount of I in the 0-30 cm layer varied within the limits 0.017-0.2 mg/kg, and in the 70-100 cm layer, within the limits 0.002-0.04 mg/kg. Planting cotton with seeds treated with I (0.5-0.75 kg/hect) led to contamination of oil with I (0.3 mg/l), and also to I contamination of oil cake, pods, seed kernels, and seeds (0.09-0.15 mg/kg). I residues were found also in cotton a year after planting I treated seeds: 0.05-0.6 mg/l in oil, 0.05-0.4 mg/kg in seeds, and 0.05-0.3 mg/kg in pods and oil cake.

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USSR

UDC 614.777:614.445(575.1)

ZAKHIDOV, A. Z., Professor and IL'INSKIY, I. I., Candidate of Medical Sciences

"Real Problems in the Purity of Water for Water Supplies and the Sanitary Preservation of Reservoirs in Uzbekistan"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 8, Aug 73, pp 10-16

Abstract: With the rapid growth rate of cities in the Soviet Union and in other countries, there are increasing problems of providing a safe water supply. In Uzbekistan, efforts to solve such problems can be divided into three periods: 1924-1934 during which the work was mostly organizational; 1935-1949, mainly laboratory studies of chemical constituents of both natural waters and polluted waste waters; and 1950-1959, a time of rapid increase in sanitation facilities and the effects of polluted water on the self purification processes of natural reservoirs. The chemical and metal industries contribute the greatest amount of pollutants, predominately fluorine, the metals such as tin, zinc, copper, iron, tungsten and others, and organic such as furfunol, acetone, phenols, benzene and petroleum derivatives. The various methods of purification and the relative efficiencies are considered. Prospects of the water supplies to the year 2000 are discussed.

1/1

USSR

UDC 662.997:662.9

AVEZOV, R. R., ZAKHIDOV, R. A., UMAROV, G. YA., MINCHUK, V. I.,
Physicotechnical Institute, Academy of Sciences, Uzbek SSR imeni
S. V. Starodubtsev

"Results of Experimental Research on the Combined Operation of
a Heat-Pump Solar Power Installation With a System of Radiation
Heating and Cooling of a Building"

Tashkent, Geliotekhnika, No 5, 1970, pp 56-59

Abstract: The combination of solar water heaters with a heat
pump and a radiation system of heating and cooling permits the
development of an efficient system for the use of solar energy
for heating. In summer, the hot water produced by the solar
water heater may be used for household needs, and the glassed
surface of the solar installation can be used at night for re-
moval of the heat of condensation. Thus, the same equipment can
serve for cooling as well as for heating. In 1968-1970 the
Physicotechnical Institute of the Academy of Sciences, Uzbek SSR
jointly with the Tashkent Zonal Scientific Research Institute

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USSR

AVEZOV. R. R., et al, Geliotekhnika, No 5, 1970, pp 56-59

of Experimental and Standard Planning conducted experimental research on the heating and cooling of buildings by means of a solar-installation and heat-pump combination. It was demonstrated that the combined operation of a solar heater, a heat pump, and a system of radiation heating permits the use of comparatively low heat-carrier temperatures; this increases the conversion factor of the heat pump and the efficiency of the solar installation. 2 figures, 6 bibliographic entries.

2/2

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USSR

UDC 547.785.5'814.1:542.953

BERESNEVA, N. K., ZAKHS, E. R., and EFROS, L. S., Leningrad Technological
Institute Imeni Lensovet

"Condensation Products of 5-Nitro- and 5,6-Dinitro-1,2,3-trimethyl-benzimidazolium Salts and o-Hydroxyaldehydes"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 7, Jul 71, pp 961-966

Abstract: Condensation of aromatic o-hydroxyaldehydes with 5-nitro and 5,6-dinitro-1,2,3-trimethylbenzimidazolium salts gave respective 2-(p-hydroxystyryl) benzimidazoliums. 5-Nitro-1,2,3-trimethylbenzimidazolium methyl sulfate (I) and its 5,6-dinitro homolog (II) were obtained by alkylation of respective nitro-1,2-dimethylbenzimidazoles with dimethyl sulfate. In an alcoholic solution and in the presence of piperidine (I) condenses easily with salicylaldehyde and its derivatives (5-nitro-, 3,5-dibromo-,) and 2-hydroxynaphthylaldehyde. Condensation of (II) in an alkaline medium is accompanied by hydrolytic cleavage of the imidazole ring, which however does not interfere with the formation of merocyanines with 3,5-dibromosalicyl and 2-hydroxynaphthylaldehydes, which are highly insoluble and precipitate from the reaction mixture. If the reaction is slow, the immediate products stay in solution, undergo cleavage and make it difficult to obtain pure products. In absolutely aprotic solvents the

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USSR

BERESNEVA, N. K., et al., Khimiya Geterotsiklicheskikh Soedineniy, No 7, Jul 71, pp 961-966

derivatives of salicyl and 5-methoxysalicylaldehydes undergo intramolecular cyclization forming derivatives of spiro(benzimidazoline-2,2'-[2H]-chromene.

2/2

- 15 -

1/2 012 UNCLASSIFIED
TITLE--OXIDATION OF O, AMINOPHENOLS -U-

PROCESSING DATE--0200170

AUTHOR--(241)-KORSHENKOVA, Z.I., GLIBIN, YE.N., ZAKHS, E.R., GINZBURG, D.F.

COUNTRY OF INFO--USSR

SOURCE--Zh. Org. Khim. 1970 (3) 510-12

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--OXIDATION, AMINE, PHENOL, BENZOIC ACID, CARBOXYLIC ACID ESTER,
THIN LAYER CHROMATOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/1421

STEP NO--UR/0366/70/006/003/0510/0512

CINC ACCESSION NO--AP0112415

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--02OCT70

2/2 012

CIRC ACCESSION NO--AP0112415

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE OXIDN. OF A MIXT. OF ET

2,AMINO,3,HYDROXY,4,METHYLBENZOATE AND ET

2,AMINO,3,HYDROXY,4,CHLOROBENZOATE WITH K SUB3 FE(CH) SUB6 IN A BUFFERED

SOLN. AT PH 7.2 GAVE A MIXT. OF OI ET 4,Y,

6,X,DISUBSTITUTED,2,AMINO,3,PHENOXA,ZONE 1,9,DICARBOXYLIC ACID ESTERS

(I) IN WHICH I (X EQUALS Y EQUALS CL), I (X EQUALS Y EQUALS ME), AND I

(X EQUALS ME, Y EQUALS CL) WERE ALSO OBTAINED AND ISOLATED BY THIN LAYER

CHROMATOGRAPHY.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--SYNTHESIS OF ANALOGS OF ACTINOMYCINS. IV. LYSINE DERIVATIVES OF
ACTINOMYCIN -U-
AUTHOR--(03)-KORSHUNOVA, Z.I., ZAKHS, E.R., GINZBURG, O.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. DKG. KHIM 1970, 6(3) 504-10

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--ACTINOMYCINS, LYSINE, BENZENE DERIVATIVE, CHEMICAL SYNTHESIS,
AMINE, HYDROXYL RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY RELL/FRAME--1992/1422

STEP NO--UR/0355/70/006/003/0504/0510

CIRC ACCESSION NO--AP0112416

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112416

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONDENSATION OF
3,BENZOLYOXY,4,METHYL,2,NITROBENZOYL CHLORIDE WITH RNH SUB2 GAVE
3,BENZYLOXY,4,METHYL,2,NITRO RNHCO SUBSTITUTED BENZENES (I). THE
CATALYTIC HYDROGENATION AND DEBENZOYLATION OF I GAVE THE CORRESPONDING
2,AMINO,3,HYDROXY DRUGS. (II) WHICH WERE OXIDIZED WITH K SUB3 FE(CN)
SUB6 AT PH 7.1 TO
1,9,(PNHCO,DISUBSTITUTED),2,AMINO,4,6,DIMETHYL,3H,PHENOXAZIN,3,ONES (R
IS CH(CO SUB2 H) (CH SUB2) SUB4 NHAC, (CH SUB2) SUB4 CH(NHAC) CO SUB2 H,
(CH SUB2) SUB4 CH(NHAC)CO SUB2 ET, CH(CO SUB2 H) (CH SUB2) SUB4 NHCO
SUB2 C H SUB2 PH, OR 2,PIPERIDINON,6,YL).

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--TERNARY SYSTEMS OF LITHIUM, SODIUM, RUBIDIUM, AND CESIUM CARBONATES
-U-
AUTHOR--(02)-ZAKHVALINSKIY, M.N., BELYKH, P.D.
COUNTRY OF INFO--USSR 2
SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 856-8
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--LITHIUM, SODIUM, RUBIDIUM, CESIUM, CARBONATE, TERNARY FLUID
SYSTEM, EUTECTIC MIXTURE, CRYSTALLIZATION, SOLID SOLUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1994/1727 STEP NO--UR/0078/70/015/003/0856/0858

CIRC ACCESSION NO--AP0115556
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0115556

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHASE DIAGRAM OF LI SUB2 CO SUB3-CS SUB2 CO SUB3-RB SUB2 CO SUB3 HAS 3 CRYSTN. FIELDS: THE CRYSTN. FIELD OF RB-CS CARBONATE SOLID SOLNS.; SOLID SOLN. OF A CONGRUENTLY MELTING COMPD.; AND LI SUB2 CO SUB3. THE SYSTEM NA SUB2 CO SUB3-CS SUB2 CO SUB3-RB SUB2 CO SUB3 HAS 4 FIELDS OF CRYSTN. CORRESPONDING TO EACH OF THE COMPONENT SALTS AND TO RB-CS CARBONATE SOLID SOLNS., THE LATTER BEING THE ALRGEST IN AREA (SIMILAR TO 73.3PERCENT). A TERNARY EUTECTIC IS AT 470DEGREES AND RB SUB2 CO SUB3 16, NA SUB2 CO SUB3 50, AND CS SUB2 CO SUB3 34 MOLE PERCENT; A PERITECTIC POINT IS AT 495DEGREES AND 29, 53, AND 18 MOLE PERCENT OF THESE SALTS, RESP.

UNCLASSIFIED

Radiation Chemistry

USSR

UDC 541.49:546.791.6

NIKOL'SKIY, B. P., KRYLOV, L. I., ZAKHVATAYEV, B. B., and LYUBTSEV, R. I.

"Study of the Complex Formation of Actinoids and Lantanoids With o-Phthalic, 3-Nitrophthalic, and 4-Nitrophthalic Acids. 1. Complex Formation of Uranium"

Leningrad, Radiokhimiya, Vol 15, No 6, 1973, pp 804-809

Abstract: The complex formation of uranium (IV) with o-phthalic (I), 3-nitrophthalic (II), and 4-nitrophthalic (III) acids was investigated by the ion exchange method. It was shown that in weak acidic solutions (pH 3.2-3.6) complexes are formed only with the anions of the second degree of dissociation of organic acids. The stability constants of uranyl complexes with (I), (II), and (III) at the ionic strength of 1, 0(NaNO₃) are respectively $1.3 \cdot 10^4$, $4 \cdot 10^3$ and $4 \cdot 10^3$. It has been shown that introduction of a nitrogroup into position 3 or 4 of the phthalic acid has practically no effect on the stability of uranyl complexes in aqueous solutions.

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USSR

BASKAKOV, V. V., ZAKHVATOV, V. N., EBERLING, N. I.

"Algorithm and Program for Multidimensional Statistical Analysis"

Mat. Metody v Geol. [Mathematical Methods in Geology -- Collection of Works], No 2, Alma-Ata, 1971, pp 177-189 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V700, by A. Doroshenko).

Translation: An algorithm and program for multidimensional statistical analysis are described: determination of means and dispersions, comparison of means (in pairs) using the Student criterion, comparison of multidimensional means using the method of multidimensional dispersion analysis. The initial data (files of numbers) are represented in matrix form. The program can solve the problem if there are not over 10 components in the file and 1270 tests in the two files being compared. The program occupies 1663₈ locations of Ural-2 computer memory. 5 biblio. refs.

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USSR

UDC 615.916:546

ZAKHVATKIN, S. V.

"Effect of Carbon Monoxide on Respiration, Glycolysis and Certain Cytophysiological Peculiarities of the Isolated Animal Cells"

Gigiyena naselen. mists'. Resp. mizhvid. zb. (Hygiene of the Populated Areas. Republic Indepartmental Collection), 1972, vyp 11, pp 53-55 (from RZh---Farmakologiya, Khimioterapevticheskiye Sredstva. Toksikologiya, No 3, Mar 73, Abstract No 3.54.669)

Translation: Holding the Erlich ascitic cancer cells for one hour in an atmosphere of pure Co or Co with 2 percent O₂ additive, suppressed the cellular respiration, decreased the formation of granules and caused a change in the luminescent-microscopic picture (the appearance of a red tint in the green color, deepening of the chromatic figure of the nuclei, guloness of the cytoplasm). The disturbances of the vital activity of the cells were stable.

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Biochemistry

USSR

UDC 541.144.7:577.471+577.471:546.11

ZAKHZEVSKEY, D. A., ROZONOVA, L. N., and KUTYURIN, V. M., Institute of Photosynthesis, Academy of Sciences USSR, Pushchino-on Oka, and V. I. Vernadskiy Institute of Geochemistry and Analytical Chemistry, USSR Academy of Sciences, Moscow

"Specific Effect of a Hydrogen Atmosphere on Oxygen Release by Tradescantia Chloroplasts"

Moscow, Doklady Akademii nauk SSSR, No 4, 1973, pp 980-982

Abstract: Tradescantia fluminesis chloroplasts were exposed to light after dark incubation under anaerobic conditions in an atmosphere of different gases. Incubation of the chloroplasts in helium and nitrogen had no effect on the release of oxygen; in both cases in intensity of the process was comparable to the aerobic control. Incubation of the chloroplasts in a nitrogen atmosphere, on the other hand, suppressed oxygen release. The inhibitory effect progressed quickly and after one hour of incubation, the rate of oxygen release decreased by 50% on the average. Unlike whole leaves, the effect of H_2 on isolated plastids was not reversible.

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Acc. Nr: **AP0044141**

Ref. Code: UR 0244

PRIMARY SOURCE: Voprosy Pitaniya, 1970, Vol 29, Nr 1,
pp 39-42

PROTEIN-BOUND IODINE LEVEL IN THE BLOOD SERUM
OF ANIMALS FED ON NATURAL AND SYNTHETIC FOOD RATIONS

G. V. Novikov, G. A. Zakirnichnaya (Leningrad)

Summary

The authors studied the protein-bound iodine content in the blood serum of albino male rats kept for a certain time on artificial and natural food rations containing different amounts of trace elements. The protein-bound iodine (PBI) was measured by using Barker's method as modified by Stepanov. Statistical processing of the measurement data testified to an increase of the BPI level in subgroups fed on iodine-enriched rations. The influence of other trace elements additions as suggested by the formulary of the nutrition Institute of the AMS of the USSR does not appear to be statistically significant. Natural food rations, basically made up of products originating from the Leningrad region, yielded the PBI level lower than in other groups. The influence of seasonal environmental changes on the PBI level and a considerable variability of this index in albino rats are pointed out.

REEL/FRAME
19770622

2

ZAKIROV, A.K.

SPRS 59208
6-73

11-4. PHYSICOCHEMICAL ANALYSIS OF THE In-P-1_2 SYSTEM AND THE MORPHOLOGY OF INDIUM PHOSPHIDE CRYSTALS GROWN BY THE CHEMICAL GAS TRANSPORT REACTION METHOD

[Article by A. V. Sandulova, A. K. Zakirov, Ye. D. Dolgov, S. Yevlakh, R. N. Skorpod, L'vov: Novosibirsk, III Sibirskiy Nauchno-Issledovatskiy Tsentr, Poluprovodnikoviy Kristalloy i Plenok, Russian, 12-17 June, 1972, p 14]

In this paper the authors have investigated the possibility of chemical processes taking place in the In-P-1_2 system. Studies were made of the reactions which can participate to one degree or another in the process of transport and crystallization of indium phosphide (InP).

The temperature dependence of the equilibrium constants of the postulated reactions in the temperature range of 600°K to 1200°K was calculated, and a physicochemical analysis was made of these reactions.

On the basis of the calculations, fragmentary and platy InP crystals were grown which reached a length of 3-6 mm and a cross section. The external faces of such crystals are perfect, mirror smooth.

It was established that the InP crystals grow in three basic crystallographic directions $\{111\}$, $\{110\}$, $\{11\bar{2}\}$.

USSR

ZAKIROV, Kh. Z., and SHATSIONOK, V. R., Chair of Infectious Diseases, Samarkand Medical Institute

"Clinical Aspects of Acute Dysentery Caused by the Flexner and Sonne Bacteria"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 7, Jul 70, pp 39-43

Abstract: The course of acute Flexner and Sonne dysentery may be characterized by frequent mild and atypical forms of the disease, occasionally accompanied by gastroenteritic, enteritic or enterocolitic syndromes. These syndromes are certain to occur in acute Sonne dysentery and are almost always accompanied by symptoms of general intoxication. Clinical manifestations of colitis or hemocolitis are weak but rectoscopy often shows definite catarrhal or erosive inflammation of the mucous membrane of distal sections of the large intestine. Inflammations heal faster than during Flexner dysentery. Since the onset of this form of dysentery is varied, no single classification of its clinical forms exists. Typical and atypical forms with light, medium, or acute course and with toxic or colitic syndromes are distinguished. The atypical form, quite often occurring in Sonne dysentery, may be of gastroenteritic, enterocolitic or enteritic variety.

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USSR

UDC 629.78.015:533.6

ZAKIROV, M. A.

"Free-Molecular Flow of Hollow Concave Wedge and Cone"

Uch. Zap. Tsentr. Aerogidrodinam. In-ta (Scientific Writings of the Central Aerohydrodynamics Institute), Vol 3, No 2, 1972, pp 158-164 (from Referativnyy Zhurnal--Raketostroyeniye, No 8, 1972, Abstract No 8.41.89)

Abstract: Formulas were obtained and results presented of calculations for the aerodynamic coefficients and local flows of particles and impulses in the flow of a hyperthermal free-molecular gas around a hollow wedge and cone with particle diffusion and mirror reflection from the surface. Behavioral features of solutions associated with breakdown of the surface and mirror reflection of particles were examined. Author's view, 4 figures, 6 bibliographical references.

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- 20 -

Acc. Nr: **AP0051938**

Ref. Code: **UR0219**

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i
Meditsiny, 1970, Vol **69**, Nr **2**, pp **116-112**.

ISOLATION OF AUXOTROPHIC MUTANTS FROM THE CULTURES OF PATHOGENIC
SEROTYPE O111:B4:H2 OF B. COLI TREATED WITH N-METHYL-
N'-NITRO-N-NITROSOGUANIDIN

N. A. Zakirov, S. Z. Ziyauldinova

Institute of Vaccines and Sera, Ministry of Health of the USSR. Tashkent

The authors isolated 55 auxotrophic mutants from the cultures of pathogenic serotype O111:B4:H2 of E. coli treated with N-methyl-N'-nitro-N-nitrosoguanidin. Investigation of the food requirements of the mutants isolated indicates that 27 of them are mono- and 13 are polyauxotrophic. In 15 mutants, requirements for individual food factors failed to be established. In some mutants, biochemical characteristics (capability to fermentate maltose) also changed compared to the initial strain. Investigation of serological characteristics allowed to establish that one group of mutants retained some antigens of the initial strain while the other completely lost them. Thus, nitroso-guanidin exerts considerable mutagenic action on bacteria of pathogenic serotype O111:B4:H2 of B. coli, especially on their antigenic structure.

REEL/FRA

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USSR

ABIDOV, A. A., Professor, ZAKIROV, N. A., Candidate of Medical Sciences and
ZIYAUTDINOVA, S. Z., Laboratory of Genetics of Vaccinal Strains, Tashkent
Scientific Research Institute of Vaccines and Sera

"Characteristics of Auxotrophic Mutants of Enteropathogenic E. coli Serotypes"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 2, 1971, pp 62-65

Abstract: Autotrophic mutants were isolated from three strains of pathogenic serotypes of E. coli -0111:B4:H2, o55:B5:H6, and 026:B6:H11 - under the influence of ultraviolet radiation or N-methyl-N¹-nitro-N-nitrosoguanidine (the more potent mutagen). The various amino acid requirements for growth of the mutants on a minimum medium were identified and tabulated. None of the mutants differed from the original strains in morphological, cultural, or biochemical properties. Study of the mutants in the agglutination reaction with homologous coli sera showed that most of the mutants retained the serological properties of the original strains. A few lost them and in some the serological properties were intensified, especially those induced by N-nitrosoguanidine.

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1/2 028 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--LACTOSE NEGATIVE MUTANTS OF PATHOGENIC E. COLI 145,020:B84 -U-
AUTHOR--(02)-ZAKIROV, N.A., ABIDOV, A.A.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 6,
PP 31-33
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ESCHERICHIA COLI, CONTINUOUS CULTURE, CULTURE MEDIUM, BACTERIA
MUTATION, LACTOSE, GUANINE, PHAGE, PATHOGEN, UV RADIATION BIOLOGIC
EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/0402 STEP NO--UR/0016/70/000/003/0031/0033
CIRC ACCESSION NO--AP0126157
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0126157

ABSTRACT/EXTRACT--(U) GP-Q- ABSTRACT. THE AUTHORS ISOLATED 30 LACTOSE
NEGATIVE MUTANTS OF PATHOGENIC E. COLI 145 (020:084). A METHOD MODIFIED
BY THE AUTHORS AND SELECTIVE ENDO NUTRIENT MEDIUM WERE USED.
MORPHOLOGICAL AND CULTURAL PROPERTIES OF THESE MUTANTS REMAINED THE SAME
AS IN THE INITIAL STRAIN 145. A STUDY OF NUTRITIONAL REQUIREMENTS
DEMONSTRATED THAT 23 MUTANTS WERE GUANINE DEPENDENT, AS THE INITIAL
STRAIN, BUT 7 MUTANTS REVERSED TO PROTOTROPHS. EXAMINATION OF THE
RELATIONSHIP OF THE ISOLATED MUTANTS TO COLI PHAGES INDICATED THAT AFTER
ULTRAVIOLET IRRADIATION SOME OF THE PATHOGENIC E. COLI RETAINED THEIR
SENSITIVITY TO PHAGES OF T GROUP, WHEREAS SOME BECAME RESISTANT TO ALL
OR TO INDIVIDUAL PHAGES. FACILITY: TASHKENTSKIY INSTITUT
VAKTSIN I SYVOROTOK.

UNCLASSIFIED

USSR

UDC: 621.396.6-181.48

ZAKIROV, R. G., OSTRETISOV, Yu. N.

"Hermetic Sealing of Integrated Circuit Housings by Capacitor Welding"

Elektron. prom-st'. Nauch.-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1972, No 1, pp 100-101 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8V272)

Translation: The paper discusses the particulars of hermetically sealing microcircuit housings and the casings of semiconductor devices by capacitor welding. Recommendations are given on selecting the materials for making the housing covers, and also the parameters of the hermetic sealing cycle. Resumé.

1/1

USSR

UDC 632.96

UMAROV, A. A., ROZHKOVA, N. K., IMAMALIYEVA, A. I., ZAKIROV, T. S., LOY, N. P., MIRAKHDAROV, KH., Institute of Chemistry of Plant Substances, Academy of Sciences of the Uzbek SSR

"A Defoliant"

USSR Author's Certificate No 325967, filed 23 Sep 70, published 25 Feb 72 (from RZh-Khimiya, No 22, Nov 72, Abstract No 22N479 P)

Translation: A defoliant is proposed which contains $Mg(CO_3)_2$. The herbicide is distinguished by the fact that the severity of its effect is reduced by using 2-butylthiobenzthiazole (butylcaptax). The $Mg(CO_3)_2$ and butylcaptax are taken in a ratio of 1:1 or 2:1. The proposed mixture is tested for defoliating the thin-fiber grade of cotton plant. Application is done in the phase when 4-5 bolls have opened. On the 12-th day, leaf fall-off reached 82.5-93.7%; dry leaf content was 1.8%. T. A. Belyayeva.

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1/2 014
UNCLASSIFIED
TITLE—EFFECTIVENESS AND PERIODS OF COTTON DEFOLIATION UNDER VARIOUS
CLIMATIC CONDITIONS —U— PROCESSING DATE—30OCT70
AUTHOR—(05)—ZAKIROV, T.S., KADRALIYEV, S.I., ALLAMURATOV, A.D., DOTSENKO,
A.S., SADYKOV, SH.B.
COUNTRY OF INFO—USSR
SOURCE—AGROKHIMIYA 1970, (2), 139-43
DATE PUBLISHED—70
SUBJECT AREAS—AGRICULTURE, BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS—DEFOLIANT AGENT, FIBER PLANT, CYANAMIDE, MAGNESIUM COMPOUND,
CHLORATE
CONTROL MARKING—NO RESTRICTIONS
DOCUMENT CLASS—UNCLASSIFIED
PRUXY REEL/FRAE—2000/0187 STEP NO—UR/0485/70/000/002/0139/0143
CIRC ACCESSION NO—AP0123956
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30DCT70

CIRC ACCESSION NO--AP0123956

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF DEFOLIATION WITH BUTIPHOS, CYANAMIDE, AND WITH MG(CLO SUB3) SUB2 UNDER VARIOUS CLIMATIC CONDITIONS AND DEVELOPMENT OF COTTON PLANTS ARE DISCUSSED. THE MOST EFFECTIVE WAS BUTIPHOS, ESP. WHEN SPRAYED AT 3 KG-HA. FACILITY: VSES. NAUCH. ISSLED. INST. KHLPOKOVOD., AKKHAYAK, USSR.

UNCLASSIFIED

USSR

UDC 577.1:612.0.14.18

KASYMOV, A. and ZAKIROVA, L. S., Tashkent State University imeni V. I. Lenin

"Fractionation of Radiotoxins and Study of Their Biological Properties"

Tashkent, Uzbekskiy Biologicheskii Zhurnal, No 3, 1970, pp 6-8

Abstract: Purified fractions of radiotoxins were isolated from irradiated potato tubers and rat liver and their biological properties were studied. Irradiation with Co^{60} gamma-rays was conducted at the Institute of Nuclear Physics, Academy of Sciences Uzbek SSR (dose rate 15 r/sec). The total dose for potato tubers was 50,000 r, and 1,000 r for rats. Radiotoxins from irradiated organisms were extracted 24 hr after irradiation and fractionated on a Sephadex 10-d column. Absorption spectrum was measured at 265 millimicrons. The effect of radiotoxins on the growth and development of corn roots was studied. It was found that the most purified fractions act on corn roots much like gamma-rays, but to a much weaker degree.

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USSR

UDC: [537.226+537.311.33]: [537+535]

ZAKIYEV, Yu. B.

"Longitudinal Reluctance of Strongly Doped n-Type Indium Arsenide in the Ultraquantum Limit"

Sb. nauch. soobshch. Dagestan. un-t po vestestv. i tekhn. n.
(Scientific Reports, Dagestan University of Natural and Technical Sciences--collection of works) Part 2, 1970, pp 46-57
(from RZh-Fizika, No. 11, 1971, Abstract No. 11E1088)

Translation: The longitudinal reluctance is experimentally investigated in InAs specimens at $T = 20.4-152^{\circ} \text{ K}$ in fields of $H < 360 \text{ kOe}$. Detailed results are given for specimens with $n = 2.6 \cdot 10^{17}$ per cc. At $H \approx 270 \text{ kOe}$, at the ultraquantum limit but with degeneration still sufficiently strong ($\epsilon/kT = 4$), the dependence $\rho_{II} \sim H^{1,2T0}$ is established. The results are qualitatively compared with the dependences of $\rho_{II}(H, T)$ predicted by theory for various dispersion mechanisms. DVM

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USSR

UDC 616.61-002.151-022.6-057

KOVAL'SKIY, G. S., VOSTRIKOV, L. A., and ZAKLINKOV, L. G., Khabarovsk Medical Institute and Khabarovskiy Kray Sanitary Epidemiological Station

"Occupational Characteristics of Hemorrhagic Fever With a Renal Syndrome in the Middle Amur Region"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1971, pp 147-148

Abstract: Hemorrhagic fever with a renal syndrome is transmitted mainly by rodents. Hence persons who work regularly or even briefly in wooded areas and farms are likely to come into contact with these animals, and their excretions and contract the disease. The following groups are particularly endangered: (a) geological prospectors, foresters, etc.; (b) persons engaged in disinfectant work and rodent extermination, biologists and others who check on this work; (c) zoologists, entomologists, and parasitologists and others engaged in studying small wild mammals in the field and in the laboratory; (d) farmhands who take care of cattle and harvest crops; (e) tractor and truck drivers and mechanics who work in rural areas; (f) persons engaged in lumbering and in the procurement, transport, and primary processing of wood.

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ZAKLINSKAYA, Ye. D

Geology +
mineralogy

IMPORTANT ACHIEVEMENTS OF PALYNOLOGY

(Conference in Novosibirsk)

STAN 5 5524
29 Feb 73

Participated by Doctor of Geological and Mineralogical Sciences Ye.
D. Zaklinskaya, Novosibirsk, Russian,
Vol 41, No 12, December 1971, pp 35-41

The regular convocation of international palynological conferences has become a tradition. The third such conference, the organization and conducting of which was entrusted to the Geological Institute, the Institute of Geology and Geography of the Siberian Department and the Institute of Geography of the AS USSR, was held in Akademgorodok near Novosibirsk on 10-25 July. Over 370 scientists from 24 countries assembled at the scientific center of Siberia to discuss the achievements and prospects of further development of palynology.

In the four years which had passed since the preceding conference in the Netherlands a considerable surge of palynological reports, especially in the paleontological and methodological aspects, the action of palynological investigations connected with prospecting and searching for petroleum, coal, gas and other minerals were expanded. Study of microfossils of proterozoic has been noticeably advanced. Spores and pollen analysis and paleopalynology on the whole have been truly an independent part of geological and archaeological work in the present and significant source of all sorts of our planet, including the reconstruction of the past and future.

New directions have been outlined in the progress of investigations of the fields of micropaleontology and fossil pollen and spores in connection with the introduction into practice of electron microscopy and modern analytical and ultrastructural methods of research on the chemical and physical properties of spores and pollen. A comprehensive approach to a solution of the issues of palynological study of pollen and spores

1/2 020 UNCLASSIFIED PROCESSING DATE--07OCT70
TITLE--ON THE EFFECT OF SURFACTANTS ON STRUCTURE FORMATION IN POWDER
DISPERSIONS IN NONPOLAR LIQUID MEDIUM AND IN AIR -U-
AUTHOR--(05)-BELUGINA, G.V., KONSTANTINOVA, V.V., MIRZABDULLAYEVA, D.,
ZAKLYEVA, S.KH., REBIADER, P.A.
COUNTRY OF INFO--USSR
SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 2, PP 177-191
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--COAGULATION, AIR, CALCIUM CARBONATE, CALCIUM FLUORIDE, IRON
OXIDE, HYDROCARBON, REACTION KINETICS, SURFACTANT, AEROSOL CHEMISTRY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REFL/FRAME--1990/0769 STEP NO--UR/0069/707032/002/0177/0181
CIRC ACCESSION NO--AP0108969
UNCLASSIFIED